DPS-3919
1 OF 1

CMCC 274X5.30
Copy 3 of 4

DOCUMENT NO.
NO CHANGE IN CLASS. ☐
☐ DECLASSIFIED
CLASS. CHANGED TO: TS S C
NEXT REVIEW DATE: 2010
AUTH: HR 70-2
DATE: 12/11/81 REVIEWER: 037169

22 August 1958

TO: WRSP-2)
) Att: Commo
WRSP-3)

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FROM: R-W, [redacted]

HEADQUARTERS

SUBJECT: Miscellaneous Information and Answers to Previous Questions

Having been back at the plant now for a week or so, I shall try to answer some of the questions contained in several of my own recent field reports:

1. In a report dated 3 June 1958 I asked several questions about the 3d-lo sweep limits. According to the arithmetic in this report (which no one has yet disputed), about 5 kc of useful sweep is lost at the beginning of each 3d-lo excursion. In fact, depending on certain time constants in the grid circuit of the lock-on cathode follower, it would seem that as much as 15 kc of useful sweep is lost. The implication is that according to this reasoning there should exist definite "blank spots" throughout the spectrum where the 3d lo is incapable of locking on.

Nevertheless, actual tests have indicated that there are in fact no "blank spots." I cannot explain this. Theory maintains that the existing overlap is attributable to skirt response of the 3d i-f and that lock-on is possible even after the intercepted signal has passed beyond center frequency of the 3d i-f.

More definite conclusions could be reached if the afc-discriminator characteristics were re-examined in detail. Unfortunately there are at present no System 3 Receivers here for making actual measurements. Perhaps one of the field detachments could perform tests to find out just exactly how this circuit behaves. If not, however, don't worry about it. The system works all right; and any frequency error introduced during the first 10 or 20 kc of 3d-lo swing due to a late lock-on is negligible anyhow.

2. I suggested in the same report referred to in the foregoing item that the test set be calibrated for a count of 380 instead of 350. No action will be taken.

Incidentally, a careful analysis of 3d-lo swing indicates that the width count should be 18 or 19 where the instruction book says 20. No theory has been advanced to account for the extra count. These figures, however, are nominal, and a count of 20 plus or minus 2 has proven normal.

3. In a report dated 4 June 1958, item A2, I requested that spring shields with holes, which the plant had earlier promised to supply, be supplied. Due to financial considerations, however, the project had long ago been abandoned. You'll have to punch your own holes, fellows.

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CMCC 274X5.30
Copy 3 of 4

22 August 1958

4. Item B1 of same report: C got the B books but not the A books; B got the A books but not the B books. Rest assured that C will soon get the A books and B the B books.

5. Item B2 of same report: It's all right to leave the relay-common conductors connected to a-c neutral. But be sure not to leave any transport in the "manual" position if any other transport is in the "auto" position. If you do, you may experience undesirable interaction among the transport-control relays.

6. Item 5 of same report: The reason that Detachment B's time-mark generator works even with 8-db dips plus a System-3 pulse train whereas Detachment C's doesn't is apparently that Detachment B's had undergone a certain factory modification that Detachment C's hadn't. [redacted], who is in charge of this sort of thing, assures us that a forthcoming modification kit will shortly be shipped to all outposts having the A rack. This modification is relatively simple and consists of a few value changes in the Schmitt Trigger plus a limiter which clobbers the System-3 pulse train before it reaches the 4-kc filter.

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7. In a report dated 10 June 1958, item 3: I have notified Engineering of the changes I found necessary in the transport-sequence control. No action will be taken by the plant since it is not known whether all transport-sequence controls suffer from the same difficulties that required the changes described here. If so, these changes can very easily be made in the field.

We are assured that Detachment B will receive new 3-hr VRO tapes from the plant to re25X1A the faulty tapes which they recently returned.

8. In a letter to [redacted] dated 1 August 1958, I described a band-1 1st-lo spur. The Engineering and Production people here inform me that this spur is the seventh overtone of the crystal's fundamental mode: $(74.8 \text{ mc}/5) \times 7 = 104.72$ mc. The spur results from abnormally low r-f resistance of the crystal. The only way to cure it is to try new band-1 crystals until you find a good one. Good luck.

9. Same letter: Engineering says that the failure of transistors and diodes is due to excessive heat. They say that contrary to the statement in Section I of the instruction book, system components cannot be expected to operate satisfactorily at temperatures "in excess of 125° C." They are considering the addition of blowers to the present systems.

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